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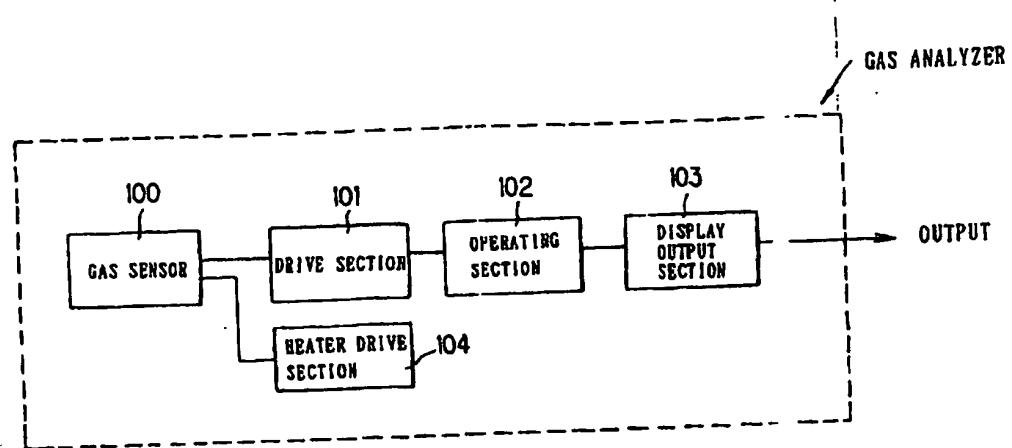
(54) Gas analyzer and method of calibrating said gas analyzer

(57) A gas analyzer includes a gas sensor (100), a drive section (101) that pumps oxygen in first to third processing zones of the gas sensor, an operating section (102) that operates a pumping current flowing in a third electro-chemical pump cell into a gas value to be measured, a display output section (103) that displays a value operated by the operating section, or outputs the value as an electrical output to the external, and a heater drive section (104) that heats the gas sensor to a predetermined temperature. In the gas sensor a gas containing a gas component to be measured having bound oxygen is introduced into a first processing zone under a predetermined diffusion resistance, and an oxygen partial pressure in the atmosphere within the first processing zone is controlled to a predetermined oxygen partial pressure due to the pumping action of oxygen by the first electro-chemical pump cell in the first processing zone. The gas to be measured is then introduced into a second processing zone under a predetermined diffusion resistance, and oxygen is pumped out

by the second electro-chemical pump cell in the second processing zone, so that the oxygen partial pressure in the atmosphere is controlled to a low oxygen partial pressure value that does not substantially influence the measurement of the amount of the gas component to be measured. Thereafter the gas to be measured is introduced into a third processing zone under a predetermined diffusion resistance, and the gas component to be measured in the atmosphere introduced from the second processing zone is reduced or decomposed in the third processing zone, and oxygen generated at that time is pumped out by a third electro-chemical pump cell. The pumping current flowing in the third electro-chemical pump cell is detected. The gas analyzer is calibrated using a plurality of samples of known gas component to be measured as a standard gas and pumping currents corresponding to the standard gas samples as a calibration curve.

EP 0 810 433 A3

FIG. 1





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## EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	EP 0 678 740 A (NGK INSULATORS LTD) 25 October 1995 * figure 14 *	1-9	G01N27/417 G01N27/419 G01N27/407
P, X	EP 0 769 693 A (NGK INSULATORS LTD) 23 April 1997 * claim 1; figures 1A,1B *	1-9	
A	US 4 722 779 A (YAMADA TETSUSYO ET AL) 2 February 1988 * claims 1,2 *	1-9	
A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 231 (P-1532), 11 May 1993 & JP 04 359145 A (MITSUBISHI MOTORS CORP), 11 December 1992, * abstract *	1-9	
A	EP 0 496 003 A (TOKUYAMA SODA KK) 29 July 1992 * figures 5,12-15 *	1-9	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	US 5 429 727 A (VOGT MICHAEL C ET AL) 4 July 1995 * figures 7A-7C *	1-9	G01N
A	US 5 429 737 A (PRIBAT DIDIER ET AL) 4 July 1995 * figures 7-9 *	1-9	
A	US 3 852 169 A (WOLFE W ET AL) 3 December 1974 * figure 1 *	1-9	
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
MUNICH	10 August 1998	Mason, W	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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